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The financial implications of economic sanctions against Iraq

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Abstract:
Al-Roubaie and Elali highlight the effects of economic sanctions on the state of the Iraqi economy. Economic sanctions are not the only cause of Iraq's financial and economic crisis, but they have exacerbated the problem owing to Iraq's weak economic structure and its high degree of dependence on trade.

Full Text:

IRAQ'S INVASION OF KUWAIT IN AUGUST 1990 led the United Nations Security Council to authorize economic sanctions against Iraq, followed soon after by the freezing of Iraq's financial assets in Western countries. These actions suspended all trade and financial relations between Iraq and a good part of the world. Today, these sanctions have not only curtailed the rate of growth of the Iraqi economy with serious economic and financial consequences, but also have had social and psychological consequences as well.(1) According to the Iraqi government the embargo has cost Iraq an estimated US$18 billion between August 1990 -- January 1991.(2) Another study calculated that it cost the country the equivalent of US$21.6 billion per annum in lost income.(3) There has been a tremendous loss in export earnings, a depreciation in the unofficial exchange rate of the Iraqi dinar, a substantial decrease in national income, and a dramatic increase in the price of goods and services. The annual inflation rate is now estimated at 2,000 percent.(4) This has produced a depressed economy and a lower standard of living not only for this generation, but perhaps for many generations to come. Dreze and Gazdar wrote: "War and prolonged sanct87ions have caused such comprehensive damage to the Iraqi economy that it is now impossible to maintain these sanctions in their present form without perpetuating, and perhaps even accentuating, the state of acute poverty in which a large part of the population is now plunged. The debate about sanctions cannot ignore this simple truth."(5)

Economic sanctions are not the only cause of Iraq's financial and economic crisis, but they have exacerbated the problem owing to Iraq's weak economic structure and its high degree of dependence on trade, which make economic recovery more difficult.

DEFINITION AND EFFECTIVENESS OF SANCTIONS

Sanctions are enacted to force the target nation to comply either with conditions imposed on it by other nations, or with a set of international laws or norms, and to bring it back into line.(6) Their effectiveness depends on the extent of damage to the economy and the nation's willingness to capitulate to the conditions imposed on it.(7)

Sanctions are supposed to deter aggressor states from their aggression. They are applied in many ways ranging from denying access to capital, prohibiting international movement, curtailing communication and transportation, and, finally, the most frequently chosen tactic, restricting imports and exports. Sanctions, therefore, have the greatest impact on manufacturing. How great that impact is depends on the output produced by the industry, its demand for import components, its percentage of the total GDP, the ability of the economy to substitute local for imported goods, and the degree of technological sophistication used by local industry.

Imposing sanctions against Iraq could not have come at a worse time. The eight years of war with Iran had diverted its resources to the war which undermined the country's development. The war also damaged oil installations, refineries, roads, irrigation systems, power plants, and communication facilities. The cities were crowded with people from the war-torn areas. Public services deteriorated, and the most essential of them such as health care, education, security and social services were especially hard hit.(8)

THE IMPORTANCE OF TRADE

Until 1950, Iraq traded only a very limited number of commodities, a direct reflection of its backwardness and low productivity, the isolation of its market and the inadequacy of transportation, communications, and marketing facilities. As part of the Middle East trading area, Iraq's trade was also influenced by the low levels of demand in the other countries of the region. Its capacity to allocate its existing resources to produce commodities which would give it an advantage was also low.

After World War II, Iraq was able to trade with new and larger markets, with a wider range of capital and consumer commodities so that it could diversify its external transactions. Thanks to the rapid increase in crude petroleum production, Iraq's major export commodity, the value of Iraq's trade increased from US$856 million in 1960 to US$22.275 billion in 1989 or by more than 2,500 percent. As a consequence, the country's balance of payments position improved, providing the economy with much of the needed foreign exchange to pay for imports, particularly capital goods and raw materials. Based on the prospects of higher revenues, government economic policies were formulated to utilize these revenues to correct sectoral imbalances and to reduce the country's dependence on international trade. It was recognized then that oil was a non-renewable resource and its contribution to the economy would lessen overtime.

It was very obvious that any damage to the Iraqi economy from the sanctions would come first from the trade sector. The Iraqi economy is an open economy highly concentrated in external trade, and it seems unlikely that its productive capacity will be capable, at least in the short term, of producing enough goods and services to substitute for imported goods. Iraq's industrial base is not solid enough for the domestic production of capital goods. Its output has a large import component. Industrial production in particular depends heavily on imported machinery, spare parts, and raw materials. Imports are paid for in foreign currencies which the country earns through trade mainly petroleum, making this commodity the most valuable item in Iraq's trade transactions. The imposition of sanctions has gradually weakened the capacity to expand production as industries use up the available stocks of spare parts.

Dependency on trade is believed to make an economy sensitive to changes in world markets. For instance, because the value of oil exports accounts for more than 95 percent of Iraq's total exports, its economic development is directly linked to the ability of oil exports to supply the required financial resources. Most of its investments are made by its public sector, and most of its oil income goes to the government, so its ability to function also depends entirely on earnings from oil. The fluctuations in volume and prices of oil are transmitted to the national economy via balance of payments affecting income, employment, government revenues, prices and output. By boycotting Iraq's exports, considerable damage has been inflicted upon the productivity of the economy.

The degree of openness of Iraq's economy can be illustrated by the ratios of export and import to Gross National Product. As shown in Table 1, the share of export to total GDP increased from 27.7 percent in 1960, to 62.1 percent in 1989. (Table 1 omitted) Similarly, the ratio of total imports to GDP increased from 23.1 percent in 1960, to 31.5 percent in 1980 and declined to 14.2 percent in 1989. The larger the ratio of export and import to income, the greater the expected damage on the economy. The wide variations in these ratios reflects the volatility of Iraq's trade and also its importance to the national economy.

Theoretically, heavy investment and modern technology in the export sector would increase the divergence in productivity between the export sector and the rest of the economy. If the linkages of the export sector are weak, it is most likely that the multiplier effect would generate very little stimulus to other sectors of the economy. In an open economy, the level of income and employment would be linked together through trade. Changes in the domestic economy of one country affects the economies of other countries. The size of the impact depends on the country's position in international trade since larger countries tend to have a greater impact than do smaller nations. To some extent, the size of the impact is determined by the forces that influence the foreign trade multiplier. The figures shown in Table 1 illustrate the sensitivity of the Iraqi economy to its trade transactions.

WEAKNESSES OF THE ECONOMIC STRUCTURE

One significant result of Iraq's shift to a modern economy after World War II has been the growth of its Gross Domestic product. Even though the figures of the GDP may not reflect a true picture of the structural changes that the country has experienced over time, they do represent a rough measure of those changes. In Iraq, the GDP increased at an average annual rate of about 7.2 percent during the period 1950-1990, at constant prices. In the 1980s, the growth rates were negative at -7.6 percent annually.

However, Iraq, like any typical developing country, was intent on rapid **development**. To speed it up, huge sums were channeled into building infrastructure, hoping to create a diversified economic base capable capable of increasing production, both for domestic and external markets. Among the countries of the region, there were very few as well equipped with economic and financial resources as Iraq was. In addition to having the second largest oil reserve in the Middle East, next to Saudi Arabia, Iraq is endowed with fertile land and sufficient water to support **agriculture**. The population of 18 million is large enough to generate an adequate demand for domestically produced industrial and agricultural products.

The impact of the oil sector, however, on the domestic economy is relatively weak. No strong linkages to other sectors, which are weak themselves, limits overall productivity. In the 1960s and 1970s, it increased only by about 12 percent, too insignificant to reveal changes. In other words, oil exports did not generate any new domestic investment,(9) and self-sufficiency remained far short of the target set early in the 1950s. Agricultural productivity did not improve much either, mainly because government subsidies were granted to win the support of the urban population at the expense of the farmers.

Table 2 shows the contribution of each sector to the country's total output. (Table 2 omitted) In 1989, for example, agriculture contributed only 5.1 percent to the country's total output; industry 11.6 percent. Since the 1970s, despite heavy investment by the public sector, oil exports have continued to dominate with 61.3 percent of GDP in 1989.

Manufacturing in Iraq produces mostly consumer products such as food and intermediate goods used in industry and other sectors. Although the industrial sector has grown steadily over the years, and now amounts to about 10 percent of the country's total output, it remains a small part of the total economy and dependent on foreign markets. For example, in 1986 the share of non-food manufactured products accounted for more than two-thirds of total imports. This low productivity means Iraq is unable to substitute local production for imported goods. Given the state of the Iraqi industrial structure, import substitutions may not be economically and technically capable of absorbing the short run impact of the boycotts. Industrial production has declined by 50 percent since August 1990.

A SIMPLE MODEL

Using a Keynesian model for analysis "cannot provide even a rough estimate of the income effects of the boycott," according to Losman.(10) In the case of lraq, though, where the data are both scarce and unreliable, this method can at least provide an approximation. Statistical data about various social and economic indicators in Iraq are also very poor, both in quantity and quality and hence any mathematical measurements would only produce rough estimates as well.

Economic policy in Iraq is determined by arbitrary political decisions, which do not necessarily reflect economic realities. The results of this model, however, still support our hypothesis that, given the poor state of the economy, the economic and financial effects of the sanctions can be substantial. In the short term, the capabilities of the Iraqi economy are very limited, as it remains highly dependent on the trade sector.

The initial impact of the sanctions is to reduce income and to affect aggregate demand including consumption, government expenditures and revenues. We have established so far that the Iraqi economy is highly dependent on exports to support development and meet the country's financial obligations. In the Keynesian approach, the effectiveness of sanctions may be seen on these exports. Boycotting them thus tends to have direct and indirect consequences that affect income, employment, prices and output.

The boycott against Iraq also includes imports. Large components of these imports are luxury consumer goods the demand for which is usually sensitive to income. Similarly, the short run demand for capital goods and replacement parts is inelastic. Thus, it is unlikely that the local market can substitute for these imports while the sanctions remain in place. The reduction in income due to loss in export earnings may cause industrial production and consumer welfare to suffer from inadequate demand as well as shortages of supply.

Judging by the initial impact of the loss in export earnings, it seems unlikely that the Iraqi economy is capable of increasing production to offset losses from the external sector. The potential impact in the longer term may even be greater due to the multiplier process. In an open economy, the equilibrium level of income is established as:

Y sub t = C sub t + I sub t + G sub t + X sub t - M sub t .... (1)

where Y sub t denotes income at time t, C sub t = consumption, I sub t =

investment, G_t =

government expenditure, X_t = exports and M_t = imports.

Two equations are to be estimated representing

$C_t = a+c Y_{t-1}$ .... (2)

$M_t = b+m Y_{t-1}$ ....(3)

where a and b are constants, c is the marginal propensity to consume (MPC) and m is the marginal propensity to import (MPM).

The adjustment procedures within the economy are derived from the above equations as represented by the following formula:(11)

$Y_t = (Y_0 - Y^*) (c-m)^t + Y^*$ .... (4)

Where Y_0 is the initial level of income and Y^* is the equilibrium level of income.

The Iraqi economy will adjust to a new equilibrium level of prices, income and employment. the new equilibrium is to be established at an income much lower than the pre-sanction levels. the full extent of this decline in income becomes clearer, if we think of the new equilibrium representing the state of the economy without oil exports. In this model, we assume that the growth in income depends on exports and therefore changes in exports causes income to vary accordingly.

By using this model to simulate the impact of sanctions on GDP, we find that a boycott of 90 percent of Iraq's exports (Scenario # 2) has led the GDP to decline by about 23 percent, one year after the imposition of sanctions. As for a longer period, the impact will reduce the GDP by about two-thirds by 1994.(12) As compared to a situation without sanctions (Scenario # 1), the model states that the impact on GDP amounts to an increase of about 9 percent by 1994 (see Table 3). (Table omitted)

the model estimates mainly the loss in export earnings on GDP over five year periods starting with 1989 as a base, i.e., 1989 = 100. the estimation of parameters is based on yearly data for the period 1970-1989. We have to acknowledge, however, that there are wide discrepancies in the data due to the sharp increase in oil prices in the 1970s and also because of the war with Iran during the period 1980-1988. the marginal propensity to consume, which relates the change in consumption to the change in income, seems to be consistent with those of other developing countries. Of course, with the imposition of the sanctions, MPC is expected to be much higher. Presently, almost all income earned by wage earners in Iraq is spent on consumption. In addition, the rise in prices affects real income making it harder for people to save anything out of their earnings.(13)

Another impact of sanctions, which can be substantial, is the reduction in government revenues and expenditures. In Iraq, the income tax base is not adequately developed to provide the government with sufficient revenues to pay for its expenditure programs. Most of these programs are financed by revenues generated by the oil export sector. the curtailment of even the basic existing public services and investment expenditures has reduced income and increaded unemployment.

the government is equally affected by the decline in income. to meet its obligations and pay salaries to its employees, the government is forced to print money. Expenditures on development programs are other casualties of this contraction in government revenues. these revenues were reduced by about 75 percent as a result of sanctions. the ability of the government to function as an instrument of growth has also declined due to the lack of funds inance investment programs. Even though the government has lately begun to allow the private sector to participate in economic activities, the decision came too late to bring about significant changes in the productivity of the economy.

THE EXTERNAL DEBT

For a number of years following the Second World War, Iraq's balance of payments position improved substantially providing the economy with much of the foreign exchange needed to finance development. Much of this improvement may be credited to the rise in world prices for oil, which increased production and export of oil. However, war with Iran in the 1980s reversed the balance of payments, plunging the country into deficit. Furthermore, the decline in the price of oil in the early 1980s reduced Iraq's foreign exchange earnings and imposed greater financial constraints on the balance of payments. to meet its financial commitments and to sustain its economic development, the country sought external loans. Between the period 1975-1989, the total outstanding debt increased from US$1.17 billion in 1975 to US$22.752 billion in 1989, an increase of about 2000 percent. In 1990 the amount of debt almost doubled compared to that of 1989 level reaching to US$42.097 billion (see table 4). (table 4 omitted) Despite a decline in export earnings, the amount of goods and services imported continued to rise. the government was reluctant to cut off its development programs, particularly during war time. For political and psychological reasons, public expenditure remained high as a maneuver on the part of the government to alleviate the tension from the war. A large proportion of the external financing was put toward imports to meet the requirements for both civilian and military consumption. Still, a large percentage of these imported goods were injected into non-productive projects such as the building of government offices, luxury hotels, conference centers and so on. thus, at the time of the sanctions in August 1990 the country was already experiencing financial difficulties in meeting its external obligations.

Accumulating a larger debt aggravated the financial situation as it raised the amount necessary to service the debt. the total debt service increased by more than eleven hundred percent between 1975 and 1989. the magnitude of the debt problem in Iraq can also be explained in terms of its relation to GDP and export earnings. Debt payment is usually made in foreign currencies that are acquired via exports. the larger the amount of payments, the less foreign exchange earnings remain to pay its other international obligations. the seriousness of the debt problem is shown in table 4. As can be seen in this table, the ratio of total debt to GDP was 69.6 percent in 1990. Similarly for exports where the ratio accounted for 397.1 percent in the same year.

the financial burden of Iraq is further complicated by the rapid increase in the amount needed to service the debt. the road to recovery and to economic revival is further hampered by having an increasing portion of income being allocated to service the debt. this situation was aggravated even more by Iraq's assets being frozen abroad, which led to its inability to make use of them to finance its international transactions.

As mentioned earlier, the Iraqi economy derives the bull< of its foreign exchange resources from oil exports. the boycott of this export accounted for the loss of about 90 percent of the country's earning capacity, which in turn placed an increased debt-serving burden on the economy. Even though the official exchange rates of the Dinar have remained unchanged, the country's financial position has deteriorated to such an extent that it is unable to meet its international payments.

Another impact that sanctions may have is the depletion of the country's international reserves. these usually consist of savings in the form of gold and convertible currencies as well as IMF special drawing rights. International reserves are acceptable to foreign countries, as a means of payment, and, therefore, can be used as part of the country's international liquidity to finance the debt. A country's external position is measured in terms of the relationship between international reserves and its external debt. In the case of lraq, total financial flows (net) changed drastically from $276.2 million in 1975 to $-1024.9 million in 1990. (UN, Handbook of lnternational trade and Development Statistics, 1993)

HYPER-INFLATION

Perhaps the most damaging aspect of the economic sanctions against Iraq has been the sharp rise in the prices of basic commodities on the domestic market. the country's dependence on imports, particularly in the area of food, aggravated the situation and enhanced the negative enforcement of the sanctions. Government monetary and fiscal policies became ineffective in dealing with the external pressure and stabilizing the market.

In the period prior to 2 August 1990, over two-thirds of Iraq's food requirements were imported: this represented almost one-quarter of the total imports costing the country US$2 billion to US$3 billion a year. Cutting off these supplies created a shortage of basic essentials, which in turn caused a sharp rise in prices on the domestic market. the subsequent limitations imposed on the capacity for production in the various sectors because of the breakdown of the infrastsucture and because of the sanctions having been imposed only worsened the situation. the economy was incapable of increased production so the effectiveness of the boycott was maximized. In addition, the uncertainty about future prices and increased speculation among the public created a demand far beyond the ability of the local market to supply in the short term. Consequently, the inflation rate accelerated and had a devastating impact on average and low wage earners.

An assessment by an international team, of the country's health and living standards after the Gulf War, found that wheat prices had increased by 4,531 percent, powdered milk by 3,661 percent, bread by 2,857 percent, baby milk by 2,222 percent, sugar by 2,208 percent just to name a few.(14) this all happened within the first year after the war and despite the government's introduction of price controls and a supply distribution mechanism. Government agencies experienced difficulties in their attempts to supply basic essentials to various regions of the country, due to the breakdown of the transportation system. thus a black market developed in many cities where food and other household items were traded at inflated prices. In the border areas, some goods were smuggled across, but the quantities were too small and insufficient to dampen the demand.

Some of the food shortages could have been avoided, but the war which destroyed the economic infrastructure as well as the irrigation system, prevented farmers from expanding production and being able to market their products. Other factors, which also affected agricultural production, were the shortage of fuel, seeds, spare parts, fertilizers, machinery and equipment. Most of these items were imports supplied by the trade sector. the sanctions not only reduced the availability of the goods in the local market, but also made it impossible for most farmers to obtain them because of the sharp rise in prices. Output in some areas declined by 70 to 75 percent compared with previous years.

the damage done to the economy by the war was extensive and so it will take an indeterminate amount of time to revive the productive structure. the mechanism to stabilize the economy and to increase production will require a long time to develop. An enormous outlay of effort and resources is needed to restore the road network, the irrigation system, machinery, equipment and so on. Furnishing such requirements can only be met, though, after the sanctions have been lifted and the export of oil has resumed. Only then will the financial pressures on the country be eased.

the depreciation of the non-official value of the Iraqi currency, the Dinar, greatly stimulated the rate of inflation in the domestic economy. theoretically, the strength of a currency is linked to the state of the economy and to the balance of payments. the imposition of sanctions prevented Iraq's earning the necessary foreign exchanges which would support its capacity to import and meet its international obligations. In the meantime, the government eased restrictions on imports by the private sector, to allow it to bring goods into the country. the refusal of foreign suppliers to accept the dinar at the official exchange rate of US$3.20 made the Iraqi currency unacceptable to the outside world as a medium of exchange. the private sector thus has to obtain hard currencies to make payments on their imported goods. the government can no longer afford these currencies at the official exchange rate so it has been left to the traders to acquire them at the unofficial rates. these rates are about 20 times higher than the official one. As a direct result of these developments, the prices for most imported goods has increased to reflect the change in the rate of exchange.

For many years, the prices of some of the basic essentials remained fixed because of government subsidies. to prevent the black market from hoarding and taking advantage of the existing circumstances, the government removed the subsidies from certain goods, particularly from food. this action by the government forced prices up to bring some equilibrium to the market. the impact of such changes in monetary variables has caused acute hardship, particularly to middle- and lower-income earners. Most of their households depend on government employment as well as on government subsidized services. the sanctions resulted in the lay off of a large number of government employees, many of whom were forced to sell some of their assets in order to pay for the rising cost of living. Living conditions are expected to continue to deteriorate unless sanctions are lifted. the productive capacity of the economy in this existing situation is unable to grow because of monetary and price constraints.

During the period 1950-1960, the annual growth rate of Iraq's imports was 12.7 percent, but because of the improved position of the balance of payments in the 1970s, imports grew at 37.1 percent annually for the period 1970-1980 and 66.3 percent during the period 1978-1979. this reflects the country's increasing dependence on foreign markets in order to satisfy local demand. this also explains the volatility of the external sector in Iraq over the past few decades (see table 5). (table 5 omitted)

CONCLUSION

An attempt has been made in this essay to measure the impact of sanctions on the Iraqi economy, with the use of a simple Keynesian multiplier model. In the short term, our study has shown that almost two-thirds of the country's income has been lost due to the recent sanctions. For 10 years prior to the Gulf crisis, the Iraqi economy had also suffered because of the war with Iran. the destruction of the country's infrastructure, including that of its vital industrial and commercial installations, has inflicted considerable damage on both the social and economic institutions of its 18 million inhabitants. Any hopes and prospects of the Iraqi economy being able to recover and regain its capability of growth were subsequently dashed, not only by the ensuing Gulf War, but also by the United Nations' trade and economic sanctions. Furthermore, Iraq's being highly dependent on only one exportable commodity, petroleum, prevented it from having a strong economy. this made national income and aggregate demand components more sensitive to changes in the country's external sector and so contributed to the complete breakdown in the country's economy.

the sole underlying purpose of this article has been to shed some light on the effects of those sanctions on the state of the Iraqi economy. It has only been to highlight some of the economic, social and financial implications of the embargo against Iraq by the international community. Because of the magnitude of Iraq's problems, this by no means provides a comprehensive account of the damage caused by the sanctions.

this study has illuminated some of the serious causes and consequences of the deteriorating living standards and the delayed effects of the sanctions, especially their effect on further retarding Iraq's economic recovery. One way to ease the constraints on the economy is to lift the embargo and allow the country to resume its normal external transactions. As M. Ahtissari, the United Nations Under-Secretary-General for Administration and Management, aptly stated, the Gulf War has "wrought near-apocalyptic results . . . most means of modern life support have been destroyed or rendered tenuous. Iraq has, for sometime to come, been relegated to a pre-industrial age, but with all the disabilities of post-industrial dependency. . . ."(15) As a result, it is unlikely that the present generation will ever be able to fully recover and so come to realize that the New World Order means something other than pain and despair.

1. See Jean Dreze and Haris Gazdar, Income and Economic Survey, a study done for the World Institute for Development Economics Research (WIDER) and London School of Economics, October 1991; Michael Jansen, "Sanctions Bite Deep", Middle East International, 15 May 1992, 9.

2. See Middle East Economist Digest, 30 August 1991, 22.

3. Gary C. Hufbauer, Jeffery J. Schott and Kimberly Ann Elliot, Economic Sanctions Reconsidered: History and Current Policy, (Washington, DC: Institute for International Economics, 1990).

4. See Dreze and Gazdar, Income and Economic Survey, 11.

5. Ibid., 40.

6. Details about sanctions can be found in Miroslav Nincic and Peter Wallensteen, eds., Dilemmas of Economic Coercion Sanctions in World Politics New York: Praeger Publishers, 1983); Donald L. Losman, International Sanctions: the Case of Cuba, Israel, and Rhosia (Albuquerque: University of New Mexico Press, 1979); Gary C. Hufbauer, J. J. Schott, and K.A. Elliott, Economic Sanctions Reconsidered: History and Current Policy, 2nd ed., 2 vols. (Washington, DC: Institute for International Economics, 1990); J. P. Hayes, Economic Effects of Sanctions on Southern Africa (London: Gower Publishing Co., 1987); Richard Porter, "International trade and Investment Sanctions", Journal of Conflict Resolution, vol. 23, no. 4 (December 1979): 579-612; P. A. Black and H. Cooper, "On the Welfare and Employment Effects of Economic Sanctions': the South African Journal of Economics, 55, No 1 (March 1987): 1-15; C. M. Jenkins, "Disinvestment: Effects on the Rate of Growth of GDP': the South African Journal of Economics, 55, No 4, 1987, 395-405.

7. the debate about various issues discussed by the Security Council which led to Resolution 661 is found in a number of United Nations publications. this resolution states that "the sanctions oblige States to prevent the import into their territories of all commodities and products exported from Iraq or Kuwait after 6 August, and to keep their nationals and others operating in their territories from selling

or supplying to Iraq or Kuwait any commodities or products, including weapons or any other military equipment". See n Chronicle, vol. XXVII, no. 4 (December 1990), 12.

8. Abbas Alnasrawi has written extensively about the economies of the Middle East, particularly Iraq. two of his recent articles can be of interest in this context: "Economic consequences of the Iraq-Iran war", third World Quarterly, 8, (3), July 1986, 869-895; and "Iraq: Economic Consequences of the 1991 Gulf War and the Future Outlook", third World Quarterly, vol. 13, no. 2, 1992,335-352.

9. Amer Al-Roubaie, "Structural Change and Iraq's Structure of Production", Arab Studies Quarterly, vol. 12, nos. 3 and 4, (Summer/Fall 1990).

10. Losman, International) Sanctions, 16.

11. For more details, see for example, Alpha C. Chiang, Fundamental Methods of Mathematical Economics (New York: McGrawHill, 1984).

12. It is worthwhile to indicate that a study done by Hufbauer, Schott, and Elliott using a different approach came to a similar conclusion stating that "the UN embargo is costing the Iraqi economy half of its 1988 level of output". See Hufbauer, Schott, and Elliott, Economic Sanctions Reconsidered, vol. I, footnote 5, 74.

13. the problem in estimating the parameters has been more noticeable with the marginal propensity to import. Iraq's pattern of import trade has fluctuated widely over the past two decades reflecting mostly the high degree of openness and dependence on foreign markets. Different marginal propensities to import have been calculated for different periods. Using data for the period 1970-1989, the marginal propensity to import was found equal to 0.12 which is very low as compared to most countries. But if we accept the fact that income has declined and imports are curtailed due to sanctions, this low marginal propensity to import can be employed to represent the remaining imports through smuggling and other channels allowed by the resolution of the United Nations.

14. Dreze and Gazdar, Income and Economic Survey, 12-14. Also see the Christian Science Monitor, 18 June 1991.

15. United Nations, Report to the Secretary-Genera) on Humanitarian Needs in Kuwait and Iraq, 20 March 1991.

Amer Al-Roubaie is a visiting Professor in the Department of Economics at the University of Vermont. Wajeed Elali is a Lecturer in the Department of Finance, Concordia University, Canada. the authors thank Otto Wadsted, University of Ottawa, Abbas Alnasrawi, University of Vermont, and Shafiq Alvi, Concordia University, for their help and valuable suggestions.
